Remarks/Arguments:

Claims 1-10, 12-15, and 17-23 were pending in this application. With this Amendment, claims 1 and 12 are being amended to incorporate therein the limitations of claims 8 and 21, respectively, which are hereby canceled. Accordingly, claims 1, 3-7, 9, 10, 12-15, 17-20, 22, and 23 are now the pending claims in this application. Support for the amendments to claims 1 and 12 can be found in the application as originally filed at, for example, claims 8 and 21, and at page 5, line 35 of the application.

Claims 1, 3, 5-8, 12, 13, and 17-21 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,228,800 to Yamaguchi et al. ("Yamaguchi"). Claims 1, 10, 12, and 23 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,013,173 to Bogdan ("Bogdan"). Dependent claims 4, 14, and 15 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Yamaguchi in view of U.S. Patent No. 3,549,720 to Wright et al. ("Wright"). Finally, dependent claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bogdan. Applicants contend that the claims as amended overcome the rejections of record.

There are two independent claims in the present application, claim 1 and claim 12. Claim 1 recites a catalyst with particular features, and claim 12 recites a process for the hydrogenation of a hydrogenatable organic compound comprising the step of passing a mixture of a gaseous feed containing that compound and hydrogen over a catalyst having certain features. Claims 1 and 12 further state that the catalyst:

> consists essentially of a palladium compound supported upon a support material selected from the group consisting of titania, magnesia, alumina, silica-alumina, a calcium-aluminate cement and mixtures thereof and a compound of a lanthanide, wherein the palladium is present at a level in the range of about 50 ppm to about 1% by weight calculated as Pd metal and the weight of the total catalyst.

Turning first to the rejection under Section 102(b) based on Yamaguchi, applicants contend that Yamaguchi fails to anticipate claims 1 and 12 for at least two reasons. First, Yamaguchi fails to disclose the range of palladium present in an amount of about 50 ppm to

about 1% by weight with sufficient specificity to rise to the level of anticipation. Second, Yamaguchi fails to specify the inclusion of a lanthanide compound such that a lanthanide compound can be "at once envisaged" from Yamaguchi.

Turning first to the claimed range, the applicants refer the Examiner to the previous rejections of claims 8 and 21, in which the Examiner alleged that Yamaguchi teaches that the amount of palladium supported is not critical. The Examiner went on to quote Yamaguchi as disclosing a range of "usually 0.1 to 20% by weight." This palladium loading of 0.1 – 20% appears in Yamaguchi at column 12, lines 42 through 45. This level of palladium, however, refers to a dual metal "palladium – lead intermetallic compound," as indicated at line 42 of column 12. Lines 45 through 48 then provide the amount of lead in such catalysts, so this paragraph can only be read to refer exclusively to Pd-Pb catalysts. The claimed invention uses "consists essentially of" as the transition clause, which would exclude compositions containing lead. Consequently, this paragraph is therefore not relevant to the pending claims.

The more relevant portion of Yamaguchi disclosing the amount of palladium is provided at column 11, line 34 through 36. There, Yamaguchi states that "the amount of carrier used is usually 5 to 200 times the amount of palladium supported." This ratio equates to a palladium loading of 0.5 to 20%. The applicants contend that this broad range does not anticipate the claimed range of about 50 ppm to about 1%. For completeness, the applicants note that the types of percentages are not quite the same in that the claimed range is based on the total weight of the catalyst, while the ranges disclosed in Yamaguchi is based on the weight of the support. For convenience, the applicants will discuss them herein as if they are the same types of percentages, as the increase in the claimed upper limit would not be significant.

The applicants refer the Examiner to MPEP § 2131.03 which discusses anticipation of ranges. Referring to Part II, the MPEP states, "when the prior art discloses a range which touches or overlaps the claim range, but no specific examples falling within the claimed range are disclosed, a case-by-case determination must be made as to anticipation." This is the precise case here, as there are no specific examples in Yamaguchi falling in the range of 50 ppm (which corresponds to 0.005%) to 1%. In fact, all of the examples of Yamaguchi are

well above the upper limit of the claimed range of 1%. In particular, the information in the examples of Yamaguchi are shown in the table below.

Example	Pd%	Ref		"basic metal salt"	Ref	
		Col	Line		Col	Line
1	5	14	27	Sodium chloride	14	26
2	5	15	7	Sodium chloride	15	5
4	5	16	38 and 39	Potassium acetate	16	26
5	5	17	5	Potassium nitrate	16	64
6	3	17	38	Magnesium chloride	17	28 and 29

As can be seen, all of the examples of Yamaguchi are either 3% or 5%.

Moreover, MPEP § 2131.03, Part II, states:

> If the claims are directed to a narrow range, and the reference teaches a broad range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. See, e.g., *Atofina v. Great Lakes Chem. Corp*, 441 F.3d 991, 999, 78 USPQ2d 1417, 1423 (Fed. Cir. 2006) wherein the court held that a reference temperature range of 100-500 degrees C did not describe the claimed range of 330-450 degrees C with sufficient specificity to be anticipatory. Further, while there was a slight overlap between the reference's preferred range (150-350 degrees C) and the claimed range, that overlap was not sufficient for anticipation. "[T]he disclosure of a range is no more a disclosure of the end points of the range than it is each of the intermediate points." *Id.* at 1000, 78 USPQ2d at 1424.

Comparing the present application with the ranges discussed above, the range of temperature in *Atofina* provided a claim range which expanded 120 degrees over the disclosed range of 400 degrees. Therefore, the claim range encompassed 30% of the disclosed range. Nonetheless, that relatively significant overlap was found not sufficient for anticipation. In the instant application, the claimed range of 50 ppm (0.005% to 1%) overlaps the disclosed range of 0.5% to 20% by only 2.6% (i.e., (1% minus 0.5%)/(20% minus 0.5%)). Moreover, there is no

recognition in Yamaguchi of improved hydrogenation selectivity, which is achieved by the present invention as shown in the description, including the examples. None of the aims of Yamaguchi, for example set forth at column 2, lines 30 through 43, would motivate an artisan to select an amount of palladium specifically at this small lower end of the Yamaguchi range as disclosed.

Turning to the second reason as to why Yamaguchi does not anticipate the claims, Yamaguchi specifies a broad range of "basic metal salts" which can be used in the catalyst of Yamaguchi. In particular, the "basic metal salt component" of Yamaguchi can be either an alkali metal, an alkaline earth metal or a rare earth metal. In addition, none of the Examples use a lanthanide compound; instead, all of the examples use as the basic metal salt component are either Na, K or Mg, referring to the table above. The broad range of choices of basic metal salt is repeated many times in the description and claims of Yamaguchi, for example at column 3, line 55 through 56; column 6, lines 65 and 66; column 8, line 54; column 11, lines 13 through 15; and claims 7 through 10. Rare earth metal compounds are just one selection from this list, and lanthanum and cerium are mentioned only once, at column 6, line 56.

Accordingly, the situation can be analogized to a genus-species situation, described in MPEP § 2131.02. In view of the breadth of genus is disclosed, and because none of the claimed species are used in the examples of that reference, the claimed species cannot be deemed to be "at one envisaged" from the broad description set forth in the reference. Moreover, the reason for the use of the basic metal salt in Yamaguchi is different from that in the claimed invention, and there is no reason provided as to why a lanthanide would achieve the purposes of Yamaguchi. More specifically, Yamaguchi uses the basic metal salt to alter the distribution of palladium within the carrier, as specified at column 7, lines 61 through 67:

> The production process of this invention is based on the principle that the palladium component is insolubilized and immobilized by a chemical reaction between the soluble palladium compound and the basic metal salt component of at least one metal selected from the group consisting of alkali metals, alkaline earth metals and rare earth metals previously supported on a carrier.

Other than its listing, there is no evidence in Yamaguchi that the incorporation of a lanthanide into a palladium catalyst influences its selectivity for hydrogenation reactions. The Examples demonstrating use of the catalyst compare a Pd-Pb catalyst (Example 3) with a Pd catalyst (Comparative Example 2) and a Pd-Bi catalyst (Example 7). None of these catalysts contains a lanthanide, as discussed above.

Accordingly, the applicants contend that Yamaguchi does not anticipate amended claims 1 and 12, and claims dependent thereon.

Turning next to the rejection based on Bogdan, Bogdan at column 1, lines 10 and 11 states that his catalyst is characterized by a combination of three or more metals. This point is further described at column 2, lines 60 through 67, where it becomes clear that, in addition to the alumina (or other refractory inorganic oxide) support, the catalyst of Bogdan must contain Pt (or another Pt group metal), tin (or other Group IVA metal), indium and a lanthanide. The Group IVA metal component is characterized as "an essential ingredient" of the catalyst described in Bogdan (column 6, line 13 through 15). In addition, Indium is characterized as "an essential ingredient" of the catalyst described in Bogdan (column 6, lines 64 and 65).

The catalyst of Bogdan contains, other than the support, platinum group metal and lanthanide, additional components, such as tin and indium. Thus, the catalyst of Bogdan does not "consist essentially of" a support, a palladium compound and a compound of a lanthanide, and therefore does not anticipate the pending claims. As claims 1 and 12 utilize the "consists essentially of" transition phrase, the catalyst of the claimed invention excludes other constituents which would materially affect the basic and novel characteristics of the claimed invention. As a group IV A metal and indium are characterized as "essential ingredients" of Bogdan, then these constituents are certainly constituents which would materially affect the basic and novel characteristics of the claimed invention. Accordingly, the applicants respectfully submit that the anticipation rejection using Bogdan be withdrawn.

Turning next to the rejection of dependent claims 4, 14, and 15, the applicants note that these claims are dependent on claims 1 or 12. Accordingly, as Wright does not implicate the

rejection of the independent claims, claims 4, 14, and 15 are believed to be patentable for the same reasons discussed above in connection with claims 1 and 12.

In any event, the applicants contend that there is an insufficient reason to combine Yamaguchi with Wright. One of the "aims" of Yamaguchi alluded to above is to use the basic metal salt in the preparation of the catalyst in order to distribute palladium just beneath the surface of the support and not throughout the support. This is a principal feature of Yamaguchi, described at column 2 lines 30 through 43:

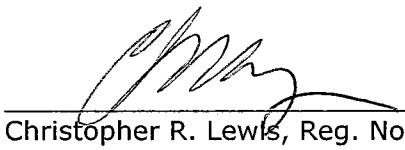
> "This invention aims at providing a supported article in which the **distribution of palladium in a carrier is controlled** and Pd is allowed to be selectively present in a specific range in order to effectively utilize the noble metal Pd supported on a carrier. This invention also provides a highly active palladium-supported article by allowing **palladium to be present in the vicinity of the surface of a carrier but not to be present in the interior of the carrier**. In addition, this invention is directed to a noble metal-supported composition having a long catalyst life by further providing **a layer in which no palladium is present as the outermost layer** when accumulation of substances which would poison the catalyst and the loss of the active components due to abrasion may be encountered."

According to Wright, on the other hand, the "palladium must be uniformly distributed throughout the support. It cannot be only on or near the surface thereof;" see column 2, lines 28 through 30. Therefore, one of ordinary skill in the art would not choose to combine the teaching of Yamaguchi with that of Wright because they have completely opposed teaching about the principal feature of the catalyst. Insufficient reason exists for this combination because it is impossible to produce a catalyst having no palladium in the interior of the catalyst, according to Yamaguchi, and also to have the palladium uniformly distributed, according to Wright.

Concerning the rejection of claims 9 and 22 as obvious in view of Bogdan, these dependent claims are dependent on claims 1 and 12, respectively. For the reasons discussed above, claims 1 and 12 are believed to be patentable over Bogdan, thereby rendering this rejection moot.

In view of the foregoing amendments and remarks, the applicants respectfully request reconsideration and allowance of the pending claims of this application.

Respectfully submitted,



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